

REMARKS/ARGUMENTS

The Office Action mailed December 18, 2002 has been carefully reviewed. Reconsideration of this application as amended and in view of the following remarks is respectfully requested.

35 USC 103 Rejection

In the Office Action mailed December 18, 2002 original claims 1-22 were rejected under 35 U.S.C. 103(a) as allegedly being unpatentable over Seward (6,205,818) in view of Wolf et al. (5,472,748). The Examiner's position regarding original claims 1-22 was basically, "It would have been obvious for one of ordinary skill in the art to perform the irradiation treatment of Seward in 'ramp-like' fashion and increasing fluence in view of the teaching Wolf et al."

Applicants Response to the 35 USC § 103 Claim Rejections

It would not be obvious within the meaning of 35 USC 103 to combine Seward and Wolf et al. as a basis for rejecting amended claims 1-22. The cited references do show the claimed combination. There is no suggestion in the references to form a proper combination. The cited references do not provide a teaching of the claimed combination. The Seward and Wolf et al. references teach away from any such combination.

"A factor cutting against a finding of motivation to combine or modify the prior art is when the prior art teaches away from the claimed combination. A reference may be said to teach away when a person of ordinary skill, upon reading the references would be discouraged from following the path set out in the reference or would be led in a direction divergent from the path the applicant took." In re Gurley, 27 F.3d 551, 31 U.S.P.Q.2d 1130 (Fed. Cir.1994).

The Seward reference makes a clear distinction between two types of laser damage, (1) laser damage associated with absorption and (2) laser damage associated with compaction. The Seward reference is strictly focused upon laser damage associated with #2 compaction, whereas the invention defined by amended claims 1-22 is focused upon laser damage associated with #1 absorption. Set out below are statements from the Seward reference that show the Seward reference is strictly focused upon laser damage associated with #2 compaction.

While the above suggested methods are at least partially effective in reducing the absorption induced at 215 and 260 nm, there has been little or no suggestion for addressing optical damage caused by radiation- induced compaction resulting from prolonged exposure to excimer lasers. Thus, there continues to be a need for more improved fused silica glasses and methods for increasing their resistance to optical damage during prolonged exposure to ultraviolet laser radiation, in particular, resistance to optical damage associated with prolonged exposure to UV radiation caused by 193 and 248 nm excimer lasers. Accordingly, it is the object of the present invention to disclose a method of increasing the resistance of high purity fused silica glass to optical damage caused by laser induced compaction during use. (Seward Col. 2, lines 56-67 and Col. 3, lines 1 &2)

SUMMARY OF THE INVENTION - Briefly, it is the object of the invention to provide fused silica having a high resistance to compaction-related optical damage caused by prolonged exposure to laser radiation. (Seward Col. 3, lines 3-7)

DETAILED DESCRIPTION OF THE INVENTION - The essence of the present invention is the discovery that by pre-compacting fused silica, the glass can be desensitized to the compaction and densification that may be caused by prolonged exposure of the glass to laser irradiation during use. (Seward Col. 3, lines 54-67 and Col. 4, lines 1 &2)

Unlike the Seward reference, the invention defined by amended claims 1-22 is focused upon laser damage associated with #1 absorption. The Seward reference is therefore irrelevant to the claimed invention. The Seward reference can not be used as a basis for rejecting amended claims 1-22. The Seward reference teaches away from the invention defined by amended claims 1-22. Set out below are statements from the present application describing the distinction between laser damage associated with #1 absorption and laser damage associated with #2 compaction, pointing out that the Seward reference is strictly focused upon laser damage associated with #2 compaction, and pointing out that the invention defined by amended claims 1-22 is focused upon laser damage associated with #1 absorption.

In U.S. Patent No. 6,205,818, March 27, 2001, Seward describes a method of rendering fused silica resistant to compaction caused by ultraviolet laser beam irradiation. The method makes the clear distinction between two types of laser damage – those associated with absorption and those associated with compaction. The concern in U.S. Patent No. 6,205,818 is focussed upon the latter form of damage, with specific concern about the birefringence of the silica optic and the transmitted wavefront alterations produced after use at wavelengths shorter than the one contemplated in the present invention. In the present invention, laser damage concerns are entirely dominated by the former type of laser damage, namely absorption. (Paragraph [0041] of the subject application)

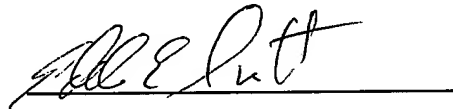
The Wolfe et al. reference is not directed to laser damage associated with #2 compaction, therefore it would not be obvious to combine the Wolfe et al.

reference with the Steward reference. The Wolfe et al. reference relates to "optical thin films" and is not directed to the Seward laser damage associated with #2 compaction. Also, the Seward reference cannot be taken in view of the Wolfe et al. reference because the methods in the two references are contradictory with respect to the laser beam fluence that is required. The Seward reference suggests an exposure to a laser beam with a fluence higher than the one anticipated under normal operating circumstances. The Wolfe et al. reference suggests an exposure to a laser beam with a fluence lower than the one anticipated under normal operating circumstances. This is understandable because the Seward reference is solving a damage problem that is completely different from the damage problem in the Wolfe et al. reference.

SUMMARY

The undersigned respectfully submits that in view of the foregoing amendments and the foregoing remarks the rejections of the claims raised in the Office Action dated December 18, 2002 have been fully addressed and overcome. The present application is believed to be in condition for allowance. It is respectfully requested that this application be reconsidered, that the claims be allowed, and that this case be passed to issue. If it is believed that a telephone conversation would expedite the prosecution of the present application, or clarify matters with regard to its allowance, the Examiner is invited to call the undersigned attorney at (925) 424-6897.

Respectfully submitted,



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